IN RESPONSE TO THE OFFICE ACTION:

REJECTION UNDER 35 U.S.C. § 102(b):

The Office Action indicates rejection of claims 1 - 4, 6, 7 and 9 - 11 under 35 U.S.C. §102(b) as being anticipated by Okawa et al. (JP 02173313). Applicant respectfully disagrees that Okawa et al. meets the teaching requirements of an anticipating reference under 35 U.S.C. §102. Rejection of claims "for want of novelty" requires an examiner to cite the best available references at his or her command and to clearly explain the pertinence of each reference, if this is not apparent (37 CFR 1.104(b)(2)). Applicant submits that the pertinence of the reference is not apparent. In support of this position, specific statements from the Office Action will be reproduced for convenient reference in the below-discussion of the evidence showing that Okawa et al. fails to anticipate the claims of the present invention.

Regarding claims 1 and 9 - 11, the Office Action states:

> "With respect to claims 1 and 9 - 11, Okawa et al. teach an apparatus for damping resonance in a conduit (Fig. 3) for transporting exhaust gases from an internal combustion engine, which conduit is provided with at least one perforation (Fig. 3, Item 4) located at a distance from the outlet end (Fig. 3, Item 2) of the conduit and at a point (Fig. 3, Item 5) in the conduit with a comparatively lower static pressure than downstream therefrom, the perforation forming an acoustic connection between the interior or the conduit and the surrounding atmosphere (Fig. 3)."

The Office Action statement that "Okawa et al. teach an apparatus for damping resonance in a conduit (Fig. 3) - -." is incompatible with the abstract and illustration (Fig. 3) in the reference. Before addressing the discrepancy, applicant includes common definitions for the terms "resonance" and "noise" from *Webster's New World Dictionary, Second College Edition*:

Resonance: The quality and state of being resonant. Physics a) the effect produced when the natural vibration frequency of a body is greatly amplified by reinforcing vibrations at the same or nearly the same frequency from another body.

Noise: Any loud, discordant or disagreeable sound or sounds. Noise is the general word for any loud, unmusical or disagreeable sound.

The Abstract of Okawa et al. clearly states the objective "To discharge water in a **noise** eliminating case through a water absorption pipe" (emphasis added). It is difficult to appreciate how a device for discharging water from a muffler has relevance to the present invention that is directed towards subduing resonant frequencies produced in automotive **tailpipes**.

Figure 3 of Okawa et al. illustrates a conventional structure for a muffler used with an internal combustion engine to reduce noises associated with fuel detonation in the cylinders of the engine. The exhaust pipe 2 includes perforations 4, but these are fully enclosed by the surrounding noise absorbing material 3 and the noise eliminating case 1. The perforations may contribute to noise reduction, but have no effect on resonant frequency reduction or variation, which depends upon altering the length of a resonating column of gas.

The difference between noise and resonance may be appreciated by recalling the distinctive sound produced by high performance motors installed in such situations as grand prix automobiles and motor cycles. While the general noise associated with the engine has been subdued by a muffler, these vehicles nevertheless emit a characteristic resonant sound at one or more points in their acceleration curve. Resonance results from reinforcement of standing waves in the tailpipe of the high speed vehicle. Reduction of the characteristic sound requires a means for changing the effective length of the tailpipe to cause interference between sound waves. The interference diminishes sound intensity by loss of reinforcement of the resonant frequency. The required means, according to claim 1 of the present invention, is at least one "perforation (14) forming an acoustic connection between the interior of the conduit (10) and the surrounding atmosphere" (emphasis added). Okawa et al. does not teach an opening providing direct connection from the interior of the conduit to the surrounding atmosphere (see Figure 3). Direct connection is prevented because of confinement of the perforations 4 inside the noise absorbing material 3 and the noise eliminating metal can 1.

In an effort to further clarify this aspect of the present invention and provide additional differentiation from the cited art, claims 18-21 have been added to further recite that "the {exhaust} conduit (10) is an end pipe that transports exhaust gases from a silencer, out into the surrounding environment." This recitation clearly differentiates the invention from the disclosure of Okawa et al., as well as Ciapetta et al. which each describe the cited arrangements as being positioned in muffler (silencer) segments of those systems, as opposed to the instantly claimed

end pipe (tail pipe) region as Applicant presently recites. Antecedent basis for this subject matter is found at least in paragraph [0013] of the application as originally filed.

The evidence shows that the disclosure of Okawa et al. addresses a structural modification 7 to remove water from a muffler, but fails to teach reduction of sound intensity for resonating tones. The figures of Okawa et al. fail to show a direct acoustic connection from the interior of a conduit to the surrounding atmosphere, as required by claim 1 of the present invention.

An acoustic connection is common to claim 1 and other independent claims of the present invention. This limitation differentiates the present invention from Okawa et al. and is the distinguishing feature providing damping or attenuation of resonant frequencies. Need for "one perforation (14) located at a distance from the outlet end (11) of the conduit," (emphasis added) as recited in claim 1 of the present invention, provides further differentiation from the reference. The distance of the perforation from the outlet end of the conduit controls either the disruption or reinforcement of sound waves in the conduit. Damping of resonance according to the present invention requires that the distance produces sound wave interference rather than sound wave reinforcement.

Claim 1 provides an apparatus claim that differs by category from method claims 9 - 11 of the present invention. Regardless that the subject matter described by claims 9 - 11 is considered as inherently taught by the structure described in claim 1, there is no evidence in the Abstract or illustrations of Okawa et al. corresponding to the recitation in claims 9 and 11, "causing at least a portion of the high magnitude resonant acoustic sound to diffuse outside the exhaust conduit upstream of the outlet." Previous discussion shows that perforations 4 of Okawa et al. are enclosed and thereby are ineffective for resonance damping. Noise is reduced by the muffler but Okawa et al. does not teach an opening in the conduit that reduces resonance by allowing sound to escape upstream of the outlet.

Rejection of claims over Okawa et al. concludes with the following statement from the Office Action:

> "With respect to claims 2 and 3, Okawa et al. teach wherein the lower static pressure in the vicinity of the perforation is brought about by means of a reduction in the cross section of the conduit (Fig. 3, Item 5); and wherein the reduction in the cross section of the conduit is designed as a venturi (Fig. 3).
>
> "With respect to claims 6 and 7, Okawa et al. teach wherein the lower static pressure in the vicinity of the perforation is brought about by means of a change in direction of the gas flow in the conduit, and wherein the change in direction of the gas flow is brought about by means of a curve of the conduit (Fig. 3), that is how the Venturi effect is created."

As illustrated in Okawa et al. the conduit includes a constriction 5, but does not include a curve that produces a change in direction of the gas flow. The constriction 5 of Okawa et al. may produce an inward curvature of the conduit but the general profile of the conduit is that of a linear structure free from a curve or bend that could deflect the direction of a gas stream.

Claims 2, 3, 6 and 7 effectively include the limitations of claim 1 of the present invention. Evidence has been presented that claim 1 is allowable over the reference of Okawa et al. Dependent claims including limitations of claim 1 should likewise be allowable.

Although rejection of claim 4 was not explained in the Office Action, this claim also includes limitations of claim 1 and should be allowable for the reasons outlined previously.

Given the above, applicant requests that the rejection of Claims 1 - 4, 6, 7 and 9 - 11 under 35 U.S.C. §102(b) be reconsidered and withdrawn and that the Examiner indicate the allowance of the claims in the next paper from the Office.

REJECTION UNDER 35 U.S.C. § 103(a):

According to MPEP Section 706.02(j), a proper rejection of claims under 35 USC §103 should contain points A - D, discussed as follows:

> **(A)** - the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate;
> **(B)** - the difference or differences in the claim over the applied reference(s);
> **(C)** - the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter; and
> **(D)** - an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification.

In rejection of the present invention for obviousness over the references of Okawa et al. and Ciapetta et al. the Office Action includes no guidance on how to reduce sound resonance using a muffler that is taught by Okawa et al. to provide improved water drainage. The muffler of Okawa et al has no provision for damping resonant frequencies. Also, there is nothing in the Office Action to suggest appreciation of the significance of an acoustic connection or its purpose for causing interference between sound waves that results in resonance damping. Showing that the Office Action does not appear to comply fully with requirements outlined in MPEP Section 706.02(j), suggests that a *prima facie* case of obviousness has not been presented.

Absent a prima facie case of obviousness (*In re Deuel*, 51 F3d 1552, 1557, 34 USPQ 2d 1210, 1214 (Fed. Cir. 1995).), applicant is not obliged to rebut a rejection of obviousness. However, such rebuttal is provided below in order to address all issues of the Office Action and in an effort to forward prosecution of the present application to allowance as follows:

Claims 5 and 15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Okawa et al (JP 02173313) in view of Ciapetta et al. (U.S. 3,471,265).

Evidence shows that the reference of Okawa et al. fails to teach or suggest an acoustic connection required by claim 1 and claim 8 of the present invention. Claim 5 includes limitations of claim 1 and claim 15 includes limitations of claim 8. Claims dependent from allowable claims should likewise be allowed.

The Office Action rejects claims 8 and 12 - 17 under 35 U.S.C. §103(a) as being unpatentable over Okawa et al. (JP 02173313). In addition to the acknowledged failure of Okawa et al. to teach a covering of a sound-permeable fabric, it has been shown previously that the noise reducing muffler of the reference lacks capability for damping resonance since it fails to include an acoustic connection comprising at least one perforation located a distance from the conduit outlet and opening to the surrounding atmosphere. The Examiner's personal knowledge concerning sound permeable fabric does not remedy the above-cited deficiencies of Okawa et al. regarding rejection of claim 8 of the present invention for obviousness.

For the reasons given, applicant believes claim 8 is patentable over the reference of Okawa et al. Claims 12 - 17 include the limitations of claim 8 and should likewise be patentable.

In view of the above, applicant submits that the requirement and burden of presenting a *prima facie* case of obviousness under 35 USC §103 has not been met. Therefore request is made for reconsideration and withdrawal of the rejection of claims 5, 8, and 12 - 17 under 35 USC §103(a).

RESPONSE TO ARGUMENTS

The Examiner's previous withdrawal of rejection of claims is acknowledged by Applicant who believes that the same action is appropriate in light of the present response showing deficiencies of currently applied references. Absent evidence of an acoustic connection the references lack basis for anticipation or rejection for obviousness of claims of the present invention.

CONCLUSION

Review of references made of record and not relied upon suggests that limitations of the present invention are not taught by documents listed.

Applicant has made an earnest attempt to respond to all the points included in the Office Action and, in view of the above, submits that cited references are ineffective as bases either for anticipating claims under 35 U.S.C. §102 or meeting the requirement and burden of presenting of a *prima facie* case of obviousness under 35 USC §103. Consequently request is respectfully made for reconsideration of the application and notification of allowance of claims 1 - 17 in the next paper from the Office.

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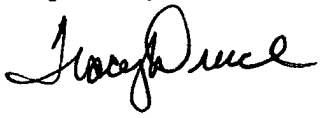
The undersigned representative hereby requests any additional extension of time that may be deemed necessary to further the prosecution of this application, the same being authorized to be charged to Deposit Account No. 14-1437, Order No. 7589.0127. PCUS00.

Still further, the undersigned representative authorizes the Commissioner to charge any additional fees under 37 C.F.R. 1.16 or 1.17 that may be required, or credit any overpayment to Deposit Account No. 14-1437, Order No. 7589. 0127. PCUS00.

In order to facilitate the resolution of any issues or questions presented by this paper, the Examiner is requested to directly contact the undersigned by phone to further the discussion.

Respectfully submitted,



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